

SN. 10/622916

IN THE CLAIMS

Please cancel claims 2-68 without prejudice.

1. (Once and presently amended) A method for removing oxygen contaminants from ammonia contaminated with oxygen, said method comprising the steps of contacting the oxygen contaminated ammonia with a getter oxygen removing material including consisting essentially of at least partially-reduced oxides of iron and manganese to sorb said oxygen contaminants from said contaminated ammonia. ~~to produce thereby ammonia substantially free of oxygen.~~

Please add the following claims.

69. (New). A method for removing oxygen from ammonia comprising the steps of:

thermally reducing hydroxides of iron and manganese to produces oxides of iron and manganese;

reducing said oxides of iron and manganese to produce an ammonia purification material, such that said purification material includes at least partially-reduced oxides of iron and manganese;

removing oxygen from an oxygen-contaminated ammonia stream with said purification material of iron and manganese, by contacting ammonia with said purification material, said removing step performed at less than 50C and greater than -20C.

70. (New) The method as recited in claim 69, further comprising a pretreatment step of adding zeolites.

71. (New) The method as recited in claim 69, wherein said reducing step takes place between 200 and 400 degrees C.

72. (New) The method as recited in claim 69, where said thermally reducing step takes place at 350 degrees C.

73. (New). The method as recited in claim 69, further comprising the act of pre-treating salts of iron and manganese to produce hydroxides of iron and manganese.

74. (new). A method of making a getter for removing oxygen contaminants from ammonia, said method comprising:

a step for pre-treating hydroxides of iron and manganese;

a step for decomposing said hydroxides of iron and manganese into oxides of iron and manganese, respectively; and

a step for exposing said oxides of iron and manganese first to a hydrogen stream and then to an argon stream resulting in said getter for removing oxygen.

wherein said getter is capable of removing oxygen from ammonia at temperatures below 50 degrees centigrade.

=> fil hca

FILE 'HCA' ENTERED AT 13:08:52 ON 03 DEC 2004

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FILE COVERS 1907 - 25 Nov 2004 VOL 141 ISS 23

FILE LAST UPDATED: 25 Nov 2004 (20041125/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 147

L5 9 SEA FILE=REGISTRY ABB=ON PLU=ON (1304-28-5/BI OR 1305-78-8/BI

OR 1314-11-0/BI OR 1344-28-1/BI OR 7439-89-6/BI OR 7439-96-5/B

I OR 7631-86-9/BI OR 7664-41-7/BI OR 7782-44-7/BI)

L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND AMMONIA/CN

L7 1 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND OXYGEN/CN

L8 1 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND MANGANESE/CN

L9 1 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND IRON/CN

L10 350262 SEA FILE=HCA ABB=ON PLU=ON L6 OR AMMONIA OR NH3

L12 555126 SEA FILE=HCA ABB=ON PLU=ON L8 OR MANGANESE OR MN

L13 1216275 SEA FILE=HCA ABB=ON PLU=ON L9 OR IRON OR FE

L14 1898750 SEA FILE=HCA ABB=ON PLU=ON L7 OR OXYGEN OR O2 OR O

L22 21957 SEA FILE=HCA ABB=ON PLU=ON L10(L) (PUR OR PREP)/RL

L23 114798 SEA FILE=HCA ABB=ON PLU=ON L14(L) (REM OR PROC)/RL

L24 165 SEA FILE=HCA ABB=ON PLU=ON L22 AND L23

L25 11 SEA FILE=HCA ABB=ON PLU=ON L24 AND L12

L27 35 SEA FILE=HCA ABB=ON PLU=ON L24 AND L13

L28 40 SEA FILE=HCA ABB=ON PLU=ON L25 OR L27

L29 6396 SEA FILE=HCA ABB=ON PLU=ON L10 AND L14 AND (L12 OR L13)

L37 357 SEA FILE=HCA ABB=ON PLU=ON L10(5A) (DEOXYGENAT? OR

(?SORB? OR

REMOV?) (3A) L14)

L38 52 SEA FILE=HCA ABB=ON PLU=ON L29 AND (CONTAMIN? OR
IMPUR?) (4A)

L14

L40 44 SEA FILE=HCA ABB=ON PLU=ON L37 AND L29
L41 95 SEA FILE=HCA ABB=ON PLU=ON L40 OR L38
L42 126 SEA FILE=HCA ABB=ON PLU=ON L41 OR L28
L43 10458 SEA FILE=HCA ABB=ON PLU=ON L14 (L) REM/RL
L44 30 SEA FILE=HCA ABB=ON PLU=ON L43 AND L42
L45 23 SEA FILE=HCA ABB=ON PLU=ON L44 AND L13
L46 5295 SEA FILE=HCA ABB=ON PLU=ON L7 (L) REM/RL
L47 15 SEA FILE=HCA ABB=ON PLU=ON L46 AND L45

=> fil wpix

FILE 'WPIX' ENTERED AT 13:09:30 ON 03 DEC 2004

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FILE LAST UPDATED: 25 NOV 2004 <20041125/UP>

MOST RECENT DERWENT UPDATE: 200476 <200476/DW>

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=> d que 149

L48 64 SEA FILE=WPIX ABB=ON PLU=ON AMMONIA(5A) (DEOXYGENAT? OR
(?SORB? OR REMOV?) (3A) OXYGEN)

L49 5 SEA FILE=WPIX ABB=ON PLU=ON L48 AND (MANGANESE OR IRON)

=> fil compendex

FILE 'COMPENDEX' ENTERED AT 13:10:06 ON 03 DEC 2004

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=> d que 150

L48 64 SEA FILE=WPIX ABB=ON PLU=ON AMMONIA(5A) (DEOXYGENAT? OR
(?SORB? OR REMOV?) (3A) OXYGEN)

L50 1 SEA FILE=COMPENDEX ABB=ON PLU=ON L48 AND (MANGANESE OR
IRON)

=> fil jicst

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=> d que 152

L52 2 SEA FILE=JICST-EPLUS ABB=ON PLU=ON
AMMONIA(5A) (DEOXYGENAT?
OR (SORB? OR REMOV?) (3A) OXYGEN)

=> dup rem 147 149 150 152

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PROCESSING COMPLETED FOR L52
L54 22 DUP REM L47 L49 L50 L52 (1 DUPLICATE REMOVED)

=> 'dis l54 1-22 ibib abs hitind

L54 ANSWER 1 OF 22 HCA COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 141:73674 HCA
TITLE: Methods for regenerating process gas purifier
materials
INVENTOR(S): Torres, Robert; Vininski, Joseph; Lawrence, David
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 19 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004123736	A1	20040701	US 2003-651644	20030828
PRIORITY APPLN. INFO.: 20020830			US 2002-407124P	P

AB A continuous method of producing a process fluid gas from a feed
stream

comprising the process fluid and impurities is provided, comprising:
(a) providing a first and second vessel, each vessel containing one or
more regenerable purifier materials for removing at least one of said
impurities from said feed stream; (b) removing at least one of said
impurities by passing said feed stream through one or the other of
said vessels to provide said purified process fluid gas, said vessel being
maintained at a first temperature during said removal of said at
least one of

said impurities; and (c) regenerating said one or more purifier materials in each of said vessels at a second temperature and during the a time when it is not purifying said feed stream by flowing a portion of said purified process fluid or said feed stream or a sep. source of said process fluid gas therethrough. The process fluids to be purified may be a hydride such as ammonia, a hydrocarbon, halocarbon, an oxide of nitrogen, a halogenated fluid, a sulfur-containing fluid, or an amine. At least one of said purifier materials is an alloy or oxide of V, Mo, Sb, Bi, Sn, Ce, Cr, Co, Cu, W, Fe, Mn, Ni, Zr, Hf, Nb, Ta, Tc, Os, Rh, Ir, Ag, Cd, Hg or mixts. thereof. The impurities able to be removed by this process include: moisture, carbon dioxide, siloxanes, germane, silane, hydrogen sulfide, oxygen, carbon monoxide and tetraethoxysilane. The invention is particularly applicable to the purification of ammonia as a process gas for semiconductor manufacturing

IC ICM B01D053-02
NCL 095116000; 095148000; 095133000
CC 48-1 (Unit Operations and Processes)
Section cross-reference(s): 67, 76
IT 1304-76-3, Bismuth oxide, uses 1306-19-0, Cadmium oxide, uses 1313-96-8, Niobium oxide 1313-99-1, Nickel oxide, uses 1314-23-4, Zirconium oxide, uses 1314-35-8, Tungsten oxide, uses 1314-61-0, Tantalum oxide 1327-33-9, Antimony oxide 1332-29-2, Tin oxide 1332-37-2, **Iron** oxide, uses 1344-70-3, Copper oxide 7439-88-5D, Iridium, alloys **7439-89-6D, Iron**, alloys **7439-96-5D, Manganese**, alloys 7439-97-6D, Mercury, alloys 7439-98-7D, Molybdenum, alloys 7440-02-0D, Nickel, alloys 7440-03-1D, Niobium, alloys 7440-04-2D, Osmium, alloys 7440-16-6D, Rhodium, alloys 7440-22-4D, Silver, alloys 7440-25-7D, Tantalum, alloys 7440-26-8, Technetium, uses 7440-26-8D, Technetium, alloys 7440-31-5D, Tin, alloys 7440-33-7D, Tungsten, alloys 7440-36-0D, Antimony, alloys 7440-43-9D, Cadmium, alloys 7440-45-1D, Cerium, alloys 7440-47-3D, Chromium, alloys 7440-48-4D, Cobalt, alloys 7440-50-8D, Copper, alloys 7440-58-6D, Hafnium, alloys 7440-62-2D, Vanadium, alloys 7440-67-7D, Zirconium, alloys 7440-69-9D, Bismuth, alloys 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide 11118-57-3, Chromium oxide 11129-18-3, Cerium

oxide 11129-60-5, **Manganese** oxide 12055-23-1, Hafnium oxide
12645-46-4, Iridium oxide 12653-71-3, Mercury oxide 12680-36-3,
Rhodium oxide 20667-12-3, Silver oxide 20816-12-0, Osmium oxide
RL: CAT (Catalyst use); USES (Uses)

(methods for regenerating process gas purifier materials and
application to semiconductor device fabrication processes)

IT 7664-41-7P, **Ammonia**, preparation 7704-34-9DP, Sulfur,
comps.

RL: PUR (Purification or recovery); PREP (Preparation)

(methods for regenerating process gas purifier materials and
application to semiconductor device fabrication processes)

IT 78-10-4, Tetraethoxysilane 124-38-9, Carbon dioxide, processes
630-08-0, Carbon monoxide, processes 7732-18-5, Water, processes
7782-44-7, **Oxygen**, processes 7782-65-2, Germane
7783-06-4, Hydrogen sulfide, processes 7803-62-5, Silane, processes

RL: REM (Removal or disposal); PROC (Process)

(methods for regenerating process gas purifier materials and
application to semiconductor device fabrication processes)

L54 ANSWER 2 OF 22 WPIX COPYRIGHT 2004 THE THOMSON CORP on STN

ACCESSION NUMBER: 2004-374908 [35] WPIX

DOC. NO. CPI: C2004-140936

TITLE: Purification of ammonia comprises contacting a crude
ammonia with purification agent such as **manganese**
oxide and metal oxide as effective component.

DERWENT CLASS: E35 J01

INVENTOR(S): ARAKAWA, S; IKEDA, T; KASAYA, T; OTSUKA, K

PATENT ASSIGNEE(S): (NIPI-N) NIPPON PIONICS CO LTD; (ARAK-I) ARAKAWA S;
(IKED-I) IKEDA T; (KASA-I) KASAYA T; (OTSU-I) OTSUKA

K

COUNTRY COUNT: 3

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2004091413	A1	20040513	(200435)*		17
JP 2004142987	A	20040520	(200435)		22
CN 1498853	A	20040526	(200458)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2004091413	A1	US 2003-691697	20031024
JP 2004142987	A	JP 2002-309134	20021024
CN 1498853	A	CN 2003-1101744	20031022

PRIORITY APPLN. INFO: JP 2002-309134 20021024

AN 2004-374908 [35] WPIX

AB US2004091413 A UPAB: 20041125

NOVELTY - An ammonia is purified by contacting a crude ammonia with purification agent such as **manganese** oxide and metal oxide as effective component. The metal oxide can be vanadium oxide, chromium oxide, tin oxide, zirconium oxide, bismuth oxide, niobium oxide, or tantalum oxide. The ratio of number of **manganese** atom to entire metallic atoms of the effective component is 80 to 99%.

USE - For purifying an **ammonia** to **remove** impurities e.g. **oxygen**, carbon monoxide, carbon dioxide or moisture, from crude ammonia.

ADVANTAGE - The inventive process utilizes purification agent that may be reproduced without reducing its capability of removing impurities in crude ammonia.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic view of a purification line to carry out the inventive process.

Purification agent 1

Purification column 3

Numerical symbols 6, 7

Dwg.1/3

L54 ANSWER 3 OF 22 WPIX COPYRIGHT 2004 THE THOMSON CORP. on STN

ACCESSION NUMBER: 2004-111392 [12] WPIX

DOC. NO. NON-CPI: N2004-088713

DOC. NO. CPI: C2004-045437

TITLE: Adsorbent for removing water and/or other oxygen-containing impurities from fluid comprising ammonia in purification apparatus, comprises compound,

e.g. ammonium sulfate, disposed within portion of porous substrate.

DERWENT CLASS: E35 E36 J01 L03 U11

INVENTOR(S): DONG, C C; RAO, M B; WU, D

PATENT ASSIGNEE(S): (AIRP) AIR PROD & CHEM INC; (DONG-I) DONG C C; (RAOM-I)

RAO M B; (WUDD-I) WU D

COUNTRY COUNT: 33

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
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EP 1380339	A1	20040114	(200412)*	EN	14
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R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU

LV

MC MK NL PT RO SE SI SK TR
US 2004009873 A1 20040115 (200412)
KR 2004005641 A 20040116 (200434)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 1380339	A1	EP 2003-14475	20030702
US 2004009873	A1	US 2002-191719	20020709
KR 2004005641	A	KR 2003-45963	20030708

PRIORITY APPLN. INFO: US 2002-191719 20020709

AN 2004-111392 [12] WPIX

AB EP 1380339 A UPAB: 20040218

NOVELTY - An adsorbent (50) for removing water from a fluid comprising ammonia, comprises a substrate having pores and a surface area that is 100-2500 m²/g; and a compound disposed within a portion of the substrate.

The compound comprises cation(s) from e.g. ammonium (I) or lithium (I),

that is ionically associated with an anion from halide, sulfide, sulfite

or sulfate.

DETAILED DESCRIPTION - An adsorbent for removing water from a fluid

comprising ammonia, comprises a substrate having pores and a surface area

that is 100-2500 m²/g; and a compound disposed within a portion of the substrate. The compound comprises cation(s) from ammonium (I), lithium (I), sodium (I), potassium (I), cesium (I), magnesium (II), calcium (II),

strontium (II), barium (II), **manganese** (II), nickel (II),

iron (II), zinc (II), aluminum (III), indium (III), **iron**

(III) and/or zirconium (IV), that is ionically associated with an anion

from halide, sulfide, sulfite or sulfate. INDEPENDENT CLAIMS are also included for:

(a) an purification apparatus (10) for removing water from ammonia

comprising the adsorbent;

(b) preparation of an adsorbent comprising providing a mixture comprising cation(s) and anion; impregnating a porous substrate with the

mixture to form an adsorbent; and heating the adsorbent precursor to at

least 100 deg. C in a gaseous atmosphere to form the adsorbent; and

(c) removal of water from a fluid comprising ammonia and water, the water contained within the fluid is at a partial pressure of 10^{-9} to 9×10^{-4} atm by passing the fluid over an adsorbent comprising 10-80 weight% compound disposed in a portion of a porous substrate at neg. 40 - 70 deg. C.

USE - For removing water and/or other oxygen-containing impurities from a fluid comprising ammonia in purification apparatus (claimed).

ADVANTAGE - The adsorbent purifies ammonia to the ppb level, has high sorption capacity and faster sorption kinetic, operates effectively at ambient temperatures, can avoid the introduction of additional contaminants to ammonia during the purification process, and requires fewer process steps to manufacture, and has lower activation temperatures.

DESCRIPTION OF DRAWING(S) - The figure is a purification apparatus

that contains an adsorbent.

Purification apparatus 10

Fluid inlet 20

Chamber 30

Fluid outlet 40

Adsorbent 50

Inlet valve 60

Outlet valve 70

Dwg.1/2

L54 ANSWER 4 OF 22 COMPENDEX COPYRIGHT 2004 EEI on STN

ACCESSION NUMBER: 2004(19):2109 COMPENDEX

TITLE: Application of coagulation and conventional filtration

in raw water pretreatment before microfiltration membranes.

AUTHOR: Sakol, Dorota (PKE S.A. Lagisza Power Plant Water and

Chemical Department, Bedzin 42-504, Poland); Konieczny, Krystyna

SOURCE: Desalination v 162 n 1-3 Mar 10 2004 2004.p 61-73

CODEN: DSLNAH ISSN: 0011-9164

PUBLICATION YEAR: 2004

DOCUMENT TYPE: Journal

TREATMENT CODE: Application; Experimental

LANGUAGE: English

AN 2004(19):2109 COMPENDEX

AB Two step coagulation using **iron** coagulant (FeCl_3) with anionic

polyelectrolyte in the first step and aluminum coagulant in the second one was made to reduce the negative effect of the fouling phenomenon. The process was operated on the commercial scale. The raw water was the blowdown water from the power plant cooling system. The dead-end microfiltration units provided with 0.2 μ m polypropylene membranes produced about 210 m³/h of water. The results of statistical tests show a significant difference between the concentrations of turbidity, total hardness, sulfates (VI), total **iron**, aluminum, silica, nitrate nitrogen, **ammonia** nitrogen, **oxygen** consumption and **absorbance** (254 nm) in the water during the whole process. The results of previous observations showed that the formation of the cake layer had been the main reason for the fouling phenomenon occurring on the investigated membranes. It is significant that 75% of the suspension has been removed during the pretreatment stages. The hydrobiological observations show the presence of Bacillariophyceae and Cyanophyta. It is possible to remove them during the coagulation and prefiltration stages. The investigation results show that it is possible to protect the polypropylene membrane from fouling occurring inside the membrane pores as well as the formation of the cake layer. The use of a hybrid process combining the traditional raw water pretreatment with a membrane process may be well-founded. \$CPY Elsevier B.V. All rights reserved. 16 Refs.

L54 ANSWER 5 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 138:355691 HCA

TITLE: Materials and methods for the purification of inert,

nonreactive, and reactive gases

INVENTOR(S): Watanabe, Tadaharu; Fraenkel, Dan; Torres, Robert, Jr.

PATENT ASSIGNEE(S): Matheson Tri-Gas, Inc., USA

SOURCE: PCT Int. Appl., 25 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003037484	A1	20030508	WO 2002-US35006	20021030

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM,
PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT,
TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ,
CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
US 2003094098 A1 20030522 US 2002-284423 20021029
US 6824589 B2 20041130
PRIORITY APPLN. INFO.: US 2001-336327P P
20011031 US 2002-284423 A
20021029
AB Regenerable gas purifier materials are provided capable of reducing
the level of **contaminants** such as **oxygen** and water in an
inert, nonreactive or reactive gas streams to parts-per-billion
levels or sub-parts-per-billion levels. The purifier materials comprise a thin
layer of one or more reduced forms of a metal oxide coated on the
surface of a nonreactive substrate. The thin layer may further contain the
completely reduced form of the metal.
IC ICM B01D053-02
CC 48-3 (Unit Operations and Processes)
IT 124-38-9, Carbon dioxide, processes 630-08-0, Carbon monoxide,
processes 1333-74-0, Hydrogen, processes 2551-62-4, Sulfur fluoride (SF6)
7439-90-9, Krypton, processes 7440-01-9, Neon, processes
7440-37-1, Argon, processes 7440-63-3, Xenon, processes 7446-09-5, Sulfur
dioxide, processes 7446-11-9, Sulfur trioxide, processes
7727-37-9, Nitrogen, processes 7732-18-5, Water, processes **7782-44-7,**
Oxygen, processes 7783-06-4, Hydrogen sulfide (H2S), processes
7783-54-2, Nitrogen fluoride (NF3) 10024-97-2, Nitrogen oxide (N2O),
processes 10043-92-2, Radon, processes 10102-43-9, Nitric oxide,

processes 10102-44-0, Nitrogen dioxide, processes 10544-72-6,
Nitrogen
oxide (N2O4) 13827-32-2, Sulfur oxide (SO) 53238-43-0, Sulfur
oxide
(S2O2)

RL: **REM (Removal or disposal)**; PROC (Process)

(regenerable materials and methods for the purification of inert,
nonreactive, and reactive gases)

IT 1304-76-3, Bismuth oxide, uses 1313-99-1, Nickel oxide (NiO), uses
1314-23-4, Zirconia, uses 1314-35-8, Tungsten oxide, uses

1327-33-9,

Antimony oxide 1332-29-2, Tin oxide 1332-37-2, **Iron** oxide,
uses 1344-28-1, Alumina, uses 1344-70-3, Copper oxide 7440-44-0,
Carbon, uses 7631-86-9, Silica, uses **7664-41-7**,

Ammonia, uses 11098-99-0, Molybdenum oxide 11104-61-3, Cobalt
oxide 11118-57-3, Chromium oxide 11129-18-3, Cerium oxide

11129-60-5, **Manganese** oxide 13463-67-7, Titania, uses

16833-27-5, Oxide 159995-97-8, Aluminum silicon oxide

RL: TEM (Technical or engineered material use); USES (Uses)

(regenerable materials and methods for the purification of inert,
nonreactive, and reactive gases)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L54 ANSWER 6 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 135:48211 HCA

TITLE: System and method for purifying and distributing
chemical gases

INVENTOR(S): Udischas, Richard; Xu, Mindi; Schnepfer, Carol;
Paganessi, Joseph

PATENT ASSIGNEE(S): Air Liquide SA pour l'Etude et l'Exploitation des
Procedes Georges Claude, Fr.

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001045819	A1	20010628	WO 2000-US41439	20001024

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,

CN,

CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,

HR,

LT, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
RU, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,
VN, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,
YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
US 6395064 B1 20020528 US 1999-426875 19991026
PRIORITY APPLN. INFO.: US 1999-426875 A
19991026
AB Distribution system vaporizes and purifies a liquefied gas from bulk
tank
to produce ultrapure chemical gases for user station. Bulk tank is
in flow
communication with a vaporization purification bed that generates the
ultrapure
chemical gas, which is subsequently routed to buffer tank, before
passage to
the user station. The pressure and temperature in vaporization
purification bed are
controlled so that droplets formed by a spray nozzle evaporate very
rapidly
and are converted into gas, while impurities in the liquid are left
behind
in the form of solid particles.
IC ICM B01D019-00
CC 48-1 (Unit Operations and Processes)
Section cross-reference(s): 47, 76
IT 74-82-8, Methane, processes 630-08-0, Carbon monoxide, processes
7439-89-6, Iron, processes 7440-02-0, Nickel,
processes 7440-23-5, Sodium, processes 7440-43-9, Cadmium,
processes
7440-47-3, Chromium, processes 7440-50-8, Copper, processes
7440-66-6,
Zinc, processes 7723-14-0, Phosphorus, processes 7727-37-9,
Nitrogen,
processes **7782-44-7, Oxygen**, processes
RL: POL (Pollutant); **REM (Removal or disposal)**; OCCU
(Occurrence); **PROC (Process)**
(system and method for purifying and distributing chemical gases)
IT 2551-62-4P, Sulfur hexafluoride 7647-01-0P, Hydrogen chloride, uses
7664-41-7P, Ammonia, uses 10024-97-2P, Nitrous oxide,
uses 10035-10-6P, Hydrogen bromide, uses

RL: **PUR (Purification or recovery)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(system and method for purifying and distributing chemical gases)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L54 ANSWER 7 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 132:154019 HCA

TITLE: Purification of **ammonia**

INVENTOR(S): Miyano, Yasusada; Otsuka, Kenji; Waki, Hiroshi

PATENT ASSIGNEE(S): Japan Pionics, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2000044228	A2	20000215	JP 1998-217168	19980731
PRIORITY APPLN. INFO.: 19980731			JP 1998-217168	

AB In **removing** of O, CO, and/CO2 from **NH3** by Ni catalysts, a H-containing gas is generated by treating **NH3** with its decomposition catalysts under heating in order to regenerate the Ni catalyst

used above. The decomposition catalyst may contain Ni, **Fe**, Ru, Pd, and/or Pt. The process is useful for H- and N-supplying-free regeneration

of Ni catalysts and useful for semiconductor manufacturing

IC ICM C01C001-02

ICS B01J023-72; B01J023-90; B01J038-10

CC 49-8 (Industrial Inorganic Chemicals)

Section cross-reference(s): 76

ST **ammonia** purifn nickel catalyst regeneration; decompn

ammonia hydrogen regeneration catalyst

IT Catalysts

Decomposition catalysts

Purification

Semiconductor device fabrication

(regeneration of Ni catalyst by H from catalytic decomposition of **NH3** in purification of Ni catalytic purification of **NH3** for **removing** of O, CO, and CO2 for semiconductor manufacturing)

IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses

7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-18-8,

Ruthenium, uses

RL: CAT (Catalyst use); USES (Uses)

(regeneration of Ni catalyst by H from catalytic decomposition of
NH3 in purification of Ni catalytic purification of **NH3** for
removing of O, CO, and CO2 for semiconductor manufacturing)

IT 1333-74-0P, Hydrogen, preparation

RL: IMF (Industrial manufacture); PEP (Physical, engineering or
chemical

process); **PREP (Preparation); PROC (Process)**

(regeneration of Ni catalyst by H from catalytic decomposition of
NH3 in purification of Ni catalytic purification of **NH3** for
removing of O, CO, and CO2 for semiconductor manufacturing)

IT 7664-41-7P, Ammonia, preparation

RL: **PUR (Purification or recovery); PREP (Preparation)**

(regeneration of Ni catalyst by H from catalytic decomposition of
NH3 in purification of Ni catalytic purification of **NH3** for
removing of O, CO, and CO2 for semiconductor manufacturing)

IT 124-38-9, Carbon dioxide, processes 630-08-0, Carbon monoxide,
processes

7782-44-7, Oxygen, processes

RL: **REM (Removal or disposal); PROC (Process)**

(regeneration of Ni catalyst by H from catalytic decomposition of
NH3 in purification of Ni catalytic purification of **NH3** for
removing of O, CO, and CO2 for semiconductor manufacturing)

L54 ANSWER 8 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 130:129222 HCA

TITLE: Process and apparatus for removal of nitrogen
trifluoride from waste gases

INVENTOR(S): Jinbo, Takashi; Yasutake, Takeshi; Harada, Isao;
Wachi, Hiroko

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 11019471	A2	19990126	JP 1997-174476	19970630
PRIORITY APPLN. INFO.: 19970630			JP 1997-174476	

AB The title process comprises mixing NF3- and O-containing waste gases
with reducing gases after removing at least a part of O from the
gases. The reducing gas may be H or **NH3**. The reaction may be
carried out in the presence of catalysts such as **Fe**, Co, Ni, Cu,

Zn, Ru, Rh, Pd, Ag, Ir, Pt, and/or Au at 0-600°. The title apparatus has a waste gas inlet, an O separation unit, a reactor for reduction, and a unit to remove the F compds. generated. The process is useful for removal of NF3 from cleaning gases in semiconductor manufacturing

IC ICM B01D053-68
ICS B01D053-86

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 47, 67, 76

ST nitrogen fluoride redn **oxygen** removal; catalyst redn nitrogen fluoride waste gas; semiconductor cleaning waste nitrogen fluoride redn;
reactor catalytic redn nitrogen fluoride removal

IT Reactors
(catalytic; removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

IT Detoxification
Reduction
Reduction catalysts
Waste gases
(removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

IT Semiconductor devices
(waste gas from cleaning of; removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

IT 7439-88-5, Iridium, uses **7439-89-6, Iron**, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses
RL: CAT (Catalyst use); USES (Uses)
(removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

IT 1333-74-0, Hydrogen, uses **7664-41-7, Ammonia**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

IT **7782-44-7, Oxygen**, processes 7783-54-2, Nitrogen trifluoride
RL: **REM (Removal or disposal)**; PROC (Process)
(removal of O before reduction of NF3 contained in waste gas with reducing gas (and catalyst))

L54 ANSWER 9 OF 22 HCA COPYRIGHT 2004 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 126:227230 HCA
TITLE: Process and getter material for **removing oxygen** from flowing **ammonia** at room temperature

INVENTOR(S): Vergani, Giorgio; Succi, Marco; Solcia, Carolina
PATENT ASSIGNEE(S): Saes Getters S.P.A., Italy
SOURCE: PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9706104	A1	19970220	WO 1996-IT158	19960802
W: CN, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5716588	A	19980210	US 1996-686583	19960726
EP 784595	A1	19970723	EP 1996-926569	19960802
EP 784595	B1	19980513		
R: BE, DE, FR, GB, IT, NL, SE				
CN 1161031	A	19971001	CN 1996-190860	19960802
CN 1078871	B	20020206		
JP 10507735	T2	19980728	JP 1997-508285	19960802
JP 3231781	B2	20011126		
US 6776970	B1	20040817	US 1997-961792	19971031
PRIORITY APPLN. INFO.:			IT 1995-MI1756	A
19950807			US 1996-686583	A1
19960726			WO 1996-IT158	W
19960802				

AB In this process, in which **O** is removed with a getter material at room temperature, the flowing **NH3** is contacted with a getter material consisting of a mixture of metallic **Fe** and **Mn** (sp. surface area .gtorsim.100 m2/g) in weight ratio (1-7):1. The getter material is supported on, e.g., zeolites, porous Al2O3, porous SiO2, and other mol. sieves. Addnl., the **NH3** is contacted with a drying agent selected from BaO, CaO, SrO, and zeolites 3A. The resulting **NH3** is especially suitable for use in semiconductor manufacture

IC ICM C01C001-02

CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 76

ST **iron manganese** powder **oxygen** getter;
semiconductor **ammonia oxygen** getter support; zeolite porous support **oxygen** getter; alumina porous support **oxygen** getter; silica porous support **oxygen** getter; mol sieve support **oxygen** getter; drying agent **oxygen**

getter **ammonia**; barium oxide drying agent; calcium oxide drying agent; strontium oxide drying agent

IT Getters

(**iron-manganese** powder; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT Drying agents

(process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT Semiconductor materials

(process and getter material for **removing oxygen** from flowing **ammonia** at room temperature for manufacture of)

IT Molecular sieves

(supports; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT Zeolites (synthetic), uses

RL: NUU (Other use, unclassified); USES (Uses)

(supports; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 1304-28-5, Barium oxide, properties 1305-78-8, Calcia, properties 1314-11-0, Strontium oxide, properties

RL: PRP (Properties)

(drying agent; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 7439-96-5, Manganese, properties

RL: PRP (Properties)

(powder, admixts. with **iron** powder; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 7439-89-6, Iron, properties

RL: PRP (Properties)

(powder, admixts. with **manganese** powder; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 7664-41-7P, Ammonia, preparation

RL: PUR (Purification or recovery); PREP (Preparation)

(process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 7782-44-7, Oxygen, processes

RL: REM (Removal or disposal); PROC (Process)

(process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

RL: NUU (Other use, unclassified); USES (Uses)

(supports, porous; process and getter material for **removing oxygen** from flowing **ammonia** at room temperature)

ACCESSION NUMBER: 127:250206 HCA
TITLE: Method and apparatus comprising two alternating purifier beds for removing impurities from specialty gases at ambient temperatures
INVENTOR(S): Carrea, Giovanni; Warrick, Brian D.; Wickman, Lewis J.
PATENT ASSIGNEE(S): Ultrapure Systems, Inc., USA
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 9731699	A1	19970904	WO 1997-US3226	19970228
W: AU, CA, CN, JP, KR, MX, RU, SG				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5833738	A	19981110	US 1996-609240	19960301
AU 9719829	A1	19970916	AU 1997-19829	19970228
PRIORITY APPLN. INFO.: 19960301			US 1996-609240	A
			WO 1997-US3226	W

19970228
AB The method comprises contacting the specialty gas with a purifier in a 1st vessel and at the same time regenerating the purifier in a 2nd vessel. The method and apparatus remove impurities from bulk-source specialty gases to levels of <10 ppb. This system is suitable for purifying corrosive and noncorrosive specialty gases. Depending on whether corrosive or noncorrosive gases are being purified and on the contaminants of concern, the purification beds contain an absorber and/or getter. Water and CO2 are removed from, e.g., NH3, using a bed of zeolite 13X.
IC ICM B01D053-04
CC 49-8 (Industrial Inorganic Chemicals)
ST gas purifn zeolite alloy getter; **iron** tin zirconium alloy getter; ammonia purifn zeolite alloy getter; water carbon dioxide ammonia purifn
IT 7664-41-7P, Ammonia, preparation
RL: PUR (Purification or recovery); PREP (Preparation)

(method and apparatus comprising two alternating purifier beds for removing

impurities from specialty gases at ambient temps.)

IT 124-38-9, Carbon dioxide, processes 630-08-0, Carbon monoxide, processes

7782-44-7, Oxygen, processes

RL: REM (Removal or disposal); PROC (Process)

(method and apparatus comprising two alternating purifier beds for removing

impurities from specialty gases at ambient temps.)

L54 ANSWER 11 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 123:323970 HCA

TITLE: The impurity processing system for the JET Active Gas

AUTHOR(S): Handling System - inactive commissioning
Lupo, J.; Hemmerich, J. L.; Lasser, R.;
Yorkshades,

CORPORATE SOURCE: J.; Salanave, J. L.
JET Joint Undertaking, Abingdon, Oxfordshire, OX14
3EA, UK

SOURCE: Fusion Technology (1995), 28(3, Pt. 2), 1347-52
CODEN: FUSTE8; ISSN: 0748-1896

PUBLISHER: American Nuclear Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The Impurity Processing (IP) system is designed to recover tritium from

tritiated compds. (Q2O, CxQy, NQ3, with Q = H, D, T and x≥1, y≥4) collected from the JET torus or generated during the processing of gases inside the Active Gas Handling System (AGHS). The recovery process involves dilution of the **impurities** in helium, addition of **oxygen**, recirculation of the helium-**impurities** -**oxygen** mixture over a hot recombiner (773 K) to generate water and CO2, and trapping of the water on 160 K cold surfaces. The

remaining gas species He, CO2, **O2**, N2 (with a very small tritium concentration) are transferred finally to the Exhaust Detritiation (ED) system for further reduction of the tritium concentration by at least a factor of 1000. The

cold trap is heated (473 K) and the water vapor passed over two hot **iron** beds at 823 K to "crack" the water. The recovered hydrogen isotopes are stored in cold uranium beds (U-beds) for further processing in AGHS.

CC 71-2 (Nuclear Technology)

IT 7439-89-6, Iron, uses 7440-61-1, Uranium, uses

RL: NUU (Other use, unclassified); USES (Uses)

(beds; impurity processing system for the JET tokamak Active Gas Handling System)

IT 74-82-8, Methane, processes 558-20-3, Methane (CD4) 676-95-9,
Methane-t4 **7664-41-7, Ammonia**, processes 7727-37-9,
Nitrogen, processes **7782-44-7, Oxygen**, processes
7789-20-0, Water-d2 13550-49-7, **Ammonia** (ND3) 14940-65-9,
Water (T20) 15070-37-8, **Ammonia**, t3

RL: **REM (Removal or disposal)**; PROC (Process)
(**impurity** processing system for the JET tokamak Active Gas Handling System)

L54 ANSWER 12 OF 22 JICST-EPlus COPYRIGHT 2004 JST on STN

ACCESSION NUMBER: 970106026 JICST-EPlus

TITLE: Studies on an air-fluidized-bed biofilm reactor system
by

dynamic models.

AUTHOR: TSUBONE TOSHIKI
TAKAHASHI MASAHIRO
ISHII MASATOSHI

CORPORATE SOURCE: NKK Corp.
Minist. of Constr. Public Work. Res. Inst.
Nihon Suido Consult.

SOURCE: Kankyo Kogaku Kenkyu Ronbunshu (Proceedings of
Environmental Engineering Research), (1995) vol. 32,
pp.
359-370. Journal Code: G0420B (Fig. 14, Tbl. 3, Ref.
12)

ISSN: 1341-5115

PUB. COUNTRY: Japan
DOCUMENT TYPE: Conference; Article
LANGUAGE: Japanese
STATUS: New

AB A mathematical model for the Air-Fluidized-Bed Biofilm Reactor (AFBBR)
was

developed based on soluble BOD (S-BOD) removal rate, **ammonia**
nitrogen **removal** rate, **oxygen** consumption rate and
oxygen transfer rate. The calculated values agreed well with the
measured
values. And then simulations were made to evaluate the effect of air
feed
rate control on the AFBBR by using this model and following results
were
obtained. Comparing with the constant and equal air feed to every
stage of
AFBBR, 1) tapered aeration had no advantages and no disadvantages, 2)
proportional air feed rate control was effective against the change
in the
influent feed rate, but not effective against the change in the
influent

concentration, 3) DO control was effective even when the DO was controlled at only one stage of the AFBBR. And based on the results about the oxygen consumption in this system, the value of the oxygen consumption per BOD removal could be smaller than that of the activated sludge system especially when the S-BOD/Total-BOD(T-BOD) ratio was small. (author abst.)

L54 ANSWER 13 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 122:224856 HCA

TITLE: Tritium purification via zirconium-**manganese**-**iron** alloy getter St 909 in flow processes

AUTHOR(S): Baker, J. D.; Meikrantz, D. H.; Pawelko, r. J.; Anderl, R. A.; Tuggle, d. G.

CORPORATE SOURCE: Idaho Natl. Eng. Lab., EG and G Idaho, Inc., Idaho Falls, ID, 83415-7111, USA

SOURCE: Fusion Technology (1995), 27(2T), 8-13
CODEN: FUSTE8; ISSN: 0748-1896

PUBLISHER: American Nuclear Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A Zr-**Mn-Fe** alloy, St 909, was evaluated as a purifier in tritium handling, transport, and storage applications. High efficiency removal of CH₄, CO, CO₂, **NH₃**, and **O₂** was observed at concns. of 0.1-1% in He. Gas streams at 100-5000 sccm were passed through getters operated at 600-800°. On-getter residence times of 2 s were required to achieve >99% removal of these reactive impurities.

At this removal efficiency level, the individual impurity capacity of 100 g

of St 909 purifier at 800° was 0.59, 0.28, 0.19, 0.14 and 0.12 mol of CH₄, CO, CO₂, **O₂** and **NH₃**, resp. Hydrogen containing gasses; CH₄ and **NH₃**; were cracked on the purifier and the resultant elemental hydrogen was released. Only 8 ± 2 scc of H₂ were retained on 100 g of St 909 at 800°. These features suggest that this alloy can be employed as an efficient purifier for hydrogen isotopes

in inert gas, nitrogen, or perhaps even H, D, or T streams.

CC 71-6 (Nuclear Technology)

Section cross-reference(s): 56

ST tritium purifn St909 getter; zirconium **manganese iron** alloy getter tritium

IT 74-82-8, Methane, processes **7664-41-7, Ammonia**, processes

RL: RCT (Reactant); REM (Removal or disposal); PROC (Process); RACT (Reactant or reagent)

(reactive impurities; evaluation of St 909 as a purifier in tritium handling, transport, and storage applications)

IT 124-38-9, Carbon dioxide, processes 630-08-0, Carbon monoxide, processes

7782-44-7, Oxygen, processes

RL: REM (Removal or disposal); PROC (Process)

(reactive **impurities**; evaluation of St 909 as a purifier in tritium handling, transport, and storage applications)

L54 ANSWER 14 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 121:259089 HCA

TITLE: Low-cost process for generating controlled atmospheres

for heat-treating furnaces from noncryogenically produced impure nitrogen

INVENTOR(S): Epting, Michael J.

PATENT ASSIGNEE(S): Air Products and Chemicals, Inc., USA

SOURCE: U.S., 10 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 5322676	A	19940621	US 1992-995656	19921222
CA 2111498	AA	19940623	CA 1993-2111498	19931215
PRIORITY APPLN. INFO.:			US 1992-995656	

19921222

AB The process comprises mixing noncryogenically produced N containing 0.05-5.0

volume% residual **O** with excess reducing gas, e.g., H, **NH3**, a C-, H-, and ≥ 1 **O**-containing hydrocarbons selected from alcs., ethers, aldehydes, ketones, Me₂CO, etc., passing the mixture at 100-950° through an **NH3** dissociator containing a Ni and/or

Fe catalyst to convert the residual **O** into moisture, CO, and CO₂, and using the resultant gaseous mixture for annealing and heat-treating ferrous and nonferrous metals and alloys, brazing

metals and

ceramics, sealing glass to metal, and sintering metal and ceramic powders.

IC ICM C01B021-04

NCL 423351000

CC 49-1 (Industrial Inorganic Chemicals)

Section cross-reference(s): 55, 57

- ST controlled atm heat treating furnace; **oxygen** removal nitrogen
controlled atm; hydrogen **oxygen** removal nitrogen;
ammonia oxygen removal nitrogen; hydrocarbon
oxygen removal nitrogen; methanol **oxygen** removal
nitrogen; copper alloy annealing controlled atm; gold alloy annealing
controlled atm; carbon steel annealing controlled atm
- IT Controlled atmospheres
(manufacture of, from noncryogenically produced **impure** nitrogen,
oxygen removal in, by combustion, for annealing and
heat-treating operations)
- IT Alcohols, reactions
Aldehydes, reactions
Ethers, reactions
Ketones, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(removal with, of **oxygen**, from noncryogenically produced
nitrogen, for controlled atms. for annealing and heat-treating
operations)
- IT 7727-37-9P, Nitrogen, preparation
RL: PREP (Preparation)
(**oxygen** removal from noncryogenically produced, by
combustion, for controlled atms. for annealing and heat-treating
operations)
- IT **7782-44-7, Oxygen**, uses
RL: **REM (Removal or disposal)**; PROC (Process)
(removal of, from noncryogenically produced nitrogen, by
combustion,
for controlled atms. for annealing and heat-treating operations)
- IT 67-56-1, Methanol, reactions 67-64-1, Acetone, reactions
1333-74-0,
Hydrogen, reactions **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**removal** with, of **oxygen**, from noncryogenically
produced nitrogen, for controlled atms. for annealing and
heat-treating
operations)

L54 ANSWER 15 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 123:61165 HCA

TITLE: Sulfur and **oxygen** removal from semi water
gas

INVENTOR(S): Wei, Xionghui

PATENT ASSIGNEE(S): Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1087110	A	19940525	CN 1992-112970	19921116

PRIORITY APPLN. INFO.:
19921116

AB A solution of ferrous salt in an HOAc-**NH3** buffer containing Fe³⁺ is used for the removal of S and O from semi water gas. The solution may also be used to remove S in urea and ammonium bicarbonate manufacture

IC ICM C10K001-10

CC 51-20 (Fossil Fuels, Derivatives, and Related Products)

ST semi water gas sulfur removal; **oxygen** removal semi water gas

IT Fuel gases
(water gas, semi; **iron** salt solns. in acetic acid-**ammonia** buffers for sulfur and **oxygen removal** from semi water gas)

IT 64-19-7, Acetic acid, uses **7439-89-6D, Iron, salts 7664-41-7, Ammonia**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**iron** salt solns. in acetic acid-**ammonia** buffers for sulfur and **oxygen removal** from semi water gas)

IT **7782-44-7, Oxygen**, processes 7783-06-4, Hydrogen sulfide, processes
RL: **REM (Removal or disposal)**; PROC (Process)
(**iron** salt solns. in acetic acid-**ammonia** buffers for sulfur and **oxygen removal** from semi water gas)

IT 57-13-6, Urea, miscellaneous 1066-33-7, Ammonium bicarbonate
RL: MSC (Miscellaneous)
(**iron** salt solns. in acetic acid-**ammonia** buffers for sulfur and **oxygen removal** in urea manufacture)

L54 ANSWER 16 OF 22 JICST-EPlus COPYRIGHT 2004 JST on STN

ACCESSION NUMBER: 930632814 JICST-EPlus

TITLE: Water Treatment System and Water Quality Control at Aquarium.

AUTHOR: IWAIZUMI TAKASHI

CORPORATE SOURCE: Ebara-Infilco Co., Ltd.

SOURCE: Kuki Chowa, Eisei Kogaku, (1993) vol. 67, no. 7, pp. 485-491. Journal Code: F0331A (Fig. 11, Tbl. 3, Ref. 4)
CODEN: KCEKA6; ISSN: 0386-4081

PUB. COUNTRY: Japan

DOCUMENT TYPE: Journal; Commentary

LANGUAGE: Japanese

STATUS: New

AB For breeding of aquatic life in an aquarium, it is a key point to create

an artificial environment which is suitable for the aquatic life. Especially, it is important to keep temperature and quality of breeding water in stable conditions. Recirculation systems with sand filters are nowadays popular as breeding water treatment facilities for aquaria. They can remove turbidity, nitrify **ammonia**, supply dissolved **oxygen** and **remove** algae or bacteria. The author summarizes recent technologies for the recirculation type breeding water treatment facilities, sea water treatment facilities for make-up water conditioning and wastewater treatment facilities for aquaria. Some important equipment and materials for the facilities are also referred to.
(author abst.)

L54 ANSWER 17 OF 22 HCA COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 117:174549 HCA
TITLE: Purification of **ammonia** by using
zirconium-vanadium-**iron** alloy
INVENTOR(S): Succi, Marco; Solcia, Carolina
PATENT ASSIGNEE(S): Saes Getters S.p.A., Italy
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 484301	A1	19920506	EP 1991-830475	19911031
EP 484301	B1	19941012		
R: DE, FR, GB, NL				
JP 04292413	A2	19921016	JP 1991-313165	19911101
PRIORITY APPLN. INFO.: 19901102			IT 1990-21958	A

AB Impurity-containing **NH3** is passed through a Zr-V-**Fe** alloy at >300° for 10 min then cooled to <150° (a temperature at which there is no appreciable dissociation of **NH3**) to give a purified **NH3**.

IC ICM C01C001-02
CC 49-8 (Industrial Inorganic Chemicals)
ST **oxygen removal ammonia alloy sorbent**
; water removal **ammonia** alloy sorbent
IT Drying
(dewatering, of **ammonia**, heated **iron**

-vanadium-zirconium alloy for)
IT 75846-81-0
RL: USES (Uses)
(heated, water and **oxygen removal** by, in
ammonia purification)
IT 7664-41-7P, **Ammonia**, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(purification of, water and **oxygen removal** in,
zirconium-vanadium-**iron** alloy for)
IT 7782-44-7, **Oxygen**, miscellaneous
RL: REM (Removal or disposal); PROC (Process)
(removal of, from **ammonia**, heated **iron**
-vanadium-zirconium alloy for)

L54 ANSWER 18 OF 22 HCA COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 104:112127 HCA
TITLE: Manufacture of **oxygen**-free nitrogen
INVENTOR(S): Iimura, Toshimitsu; Yamazaki, Norio; Minagawa,
Isamu
PATENT ASSIGNEE(S): Taiyo Sanso Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60166206	A2	19850829	JP 1984-19250	19840203
PRIORITY APPLN. INFO.: 19840203			JP 1984-19250	

AB **O**-free N2 (<1 ppm **O**) is manufactured by addition of
NH3 at equivalent amount in 4:3 (mol. ratio) **NH3-O2**
in N2 and oxidation (180-190°) of **NH3** over a catalyst of
15-85:15-85 (weight ratio) **Mn** oxide-spinel type crystal (e.g., V,
Cr, **Fe**, Co, Ni, Cu, Zn, Mo, W, or Au).
IC ICM C01B021-04
ICS B01J023-34; B01J023-68; B01J023-84
CC 48-1 (Unit Operations and Processes)
Section cross-reference(s): 49
ST nitrogen manuf **oxygen** free; **oxygen** removal nitrogen
manuf; **ammonia** oxidn catalyst nitrogen purifn; **manganese**
oxide catalyst nitrogen purifn; spinel crystal catalyst nitrogen
purifn
IT Spinel-type crystals
(catalysts containing **manganese** oxide and, for **ammonia**
oxidation, in nitrogen purification)

- IT Oxidation catalysts
(**manganese** oxide-spinel crystal metals, for **ammonia**
, in nitrogen purification)
- IT Air
(nitrogen enrichment of, manufacture of **oxygen**-free nitrogen in,
by **ammonia** oxidation)
- IT **7439-89-6**, uses and miscellaneous **7439-98-7**, uses and
miscellaneous **7440-02-0**, uses and miscellaneous **7440-22-4**, uses
and miscellaneous **7440-33-7**, uses and miscellaneous **7440-47-3**, uses
and miscellaneous **7440-48-4**, uses and miscellaneous **7440-50-8**, uses
and miscellaneous **7440-62-2**, uses and miscellaneous **7440-66-6**, uses
and miscellaneous
RL: USES (Uses)
(catalysts containing **manganese** oxide and, for oxidation of
ammonia, in nitrogen purification)
- IT **7439-96-5D**, oxides
RL: CAT (Catalyst use); USES (Uses)
(oxidation catalysts containing, for **ammonia**, in purification of
nitrogen)
- IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, catalysts for, in nitrogen purification)
- IT **7727-37-9P**, preparation
RL: PUR (**Purification or recovery**); PREP (**Preparation**)
(purification of, in **removal** of **oxygen**, by
ammonia oxidation)
- IT **7782-44-7**, uses and miscellaneous
RL: REM (**Removal or disposal**); PROC (**Process**)
(**removal** of, in nitrogen purification, by **ammonia**
oxidation)

L54 ANSWER 19 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 93:222536 HCA

TITLE: Catalytic **ammonia** decomposition and the
removal of **oxygen** and water vapor
from nitrogen-hydrogen mixtures

AUTHOR(S): Zlatkov, P.

CORPORATE SOURCE: Bulg.

SOURCE: Khimiya i Industriya (1922-1988) (1980), (5),
214-15

CODEN: KINSAF; ISSN: 0368-5764

DOCUMENT TYPE: Journal

LANGUAGE: Bulgarian

AB **NH3** is decomposed to $N_2 + H_2$ over an **Fe** catalyst at

680-700°. The **O2** is removed by using a highly active Pd catalyst. H2O and **NH3** are removed with mol. sieve Ca5A. The catalyst is an Al2O3 carrier containing Fe2O3 63.9, FeO 30.1, Al2O3 4.0, K2O 1.6, and S 0.4%. When **NH3** containing 0.2-1% H2O is decomposed a N2 + H2 mixture containing 0.0001 volume% **O2** having a dew point of -75° is prepared

CC 49-1 (Industrial Inorganic Chemicals)

ST hydrogen nitrogen prepn catalyst; **ammonia** decompn catalyst; **oxygen** removal; water vapor removal; **iron** catalyst

IT Dissociation catalysts
(**iron**, for **ammonia**)

IT Catalysts and Catalysis
(palladium, for **oxygen** removal from hydrogen-containing gases)

IT **7439-89-6**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for **ammonia** decomposition)

IT 7440-05-3, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for **oxygen** removal from hydrogen-containing gas)

IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(decomposition of, with **iron** catalyst, **oxygen** and water removal in)

IT 1333-74-0P, preparation 7727-37-9P, preparation
RL: **PREP (Preparation)**
(preparation of, by **ammonia** decomposition, **iron** catalyst for)

IT **7782-44-7**, uses and miscellaneous
RL: **REM (Removal or disposal)**; **PROC (Process)**
(removal of, from hydrogen-containing gases, palladium catalysts in)

L54 ANSWER 20 OF 22 HCA COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 87:123350 HCA

TITLE: **Ammonia** combustion catalysts

INVENTOR(S): Taura, Teruchika

PATENT ASSIGNEE(S): Nippon Junsuiso Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 52065192	A2	19770530	JP 1975-140950	19751125
JP 55040052	B4	19801015		

PRIORITY APPLN. INFO.:
19751125

JP 1975-140950

AB Catalyst carriers made of alloys containing Cr and Ni are etch treated, then coated with Pd and heated in H to give **NH3** combustion catalysts. The catalysts have good durability and good catalytic activity, and the combustion of **NH3**-air mixture produces N-H2O mixture containing no NOx.

Thus, a outer surface of SUS 42 (containing 20% Ni and 25% Cr) tube (outer diameter 10, inner diameter 8, length 625 mm) was coated with an acid-resistant resin, the tube was immersed 20 min in aqueous 10 weight % HCl solution at 70-80° to remove 13.04 weight % of the steel tube, the inner wall of the tube was electroplated with Pd from an electrolyte containing PdCl2.2H2O

3.7, Na2HPO4.12H2O 100, (NH4)2HPO4 20, and benzoic acid 2.5g/L, and the tube was heated at 750-850° for 30 min while H was passed through the tube to give a reaction tube having catalytic inner wall. The amount of Pd in the tube was 0.16 weight %. Air containing 23.5 volume % **NH3** was

then passed through the tube (at 700-860°) at a space velocity (of product gas) of 20,000 h-1: the **NH3**, NOx, and O in product gas were 0.5 volume %, O ppm, and ≤1.0ppm, resp.

IC B01J023-86

CC 67-1 (Catalysis and Reaction Kinetics)

Section cross-reference(s): 48

ST **ammonia** combustion catalyst; palladium catalyst **ammonia** combustion; **oxygen removal** catalyst **ammonia**

IT Air

(**oxygen removal** from, by combustion of **ammonia**, catalysts for)

IT Combustion catalysts

(palladium-leached **iron** alloy, for **ammonia** in air)

IT 37301-67-0

RL: RCT (Reactant); RACT (Reactant or reagent)

(catalyst manufacture from, for combustion of **ammonia**)

IT 7440-05-3, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for combustion of **ammonia**)

IT **7664-41-7**, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(combustion of, palladium-leached alloy catalyst for)

IT **7782-44-7**, uses and miscellaneous

RL: REM (Removal or disposal); PROC (Process)
(removal of, from air by combustion of ammonia, catalyst for)

L54 ANSWER 21 OF 22 WPIX COPYRIGHT 2004 THE THOMSON CORP on STN
ACCESSION NUMBER: 1977-13792Y [08] WPIX
TITLE: Nitrogen oxides removal from gas also containing
sulphur
oxides and oxygen - by mixing with ammonia in
presence of
catalyst formed by supporting base metal component on
cation-exchanged synthetic zeolite.
DERWENT CLASS: E36 J01
PATENT ASSIGNEE(S): (TOFU) TOA NENRYO KOGYO KK
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 52004469	A	19770113	(197708)*		
JP 58014251	B	19830318	(198315)		

PRIORITY APPLN. INFO: JP 1975-21339 19750221; JP
1976-58229 19770606

AN 1977-13792Y [08] WPIX
AB JP 52004469 A UPAB: 19930901
Synthetic zeolite (e.g. synthetic faujasite or synthetic mordenite) is
dealkalised to form hydrogen type synthetic zeolite containing alkali
metal of
0.2-0.6 equivalent pref. 0.2-0.4 equivalent, per gram-atom of
aluminium. Using
this as carrier, one or more base metal components (e.g. sulphate of
copper or iron, oxide of chromium or vanadium, etc.) are
supported on it by impregnation under conditions causing no
ion-exchange,
obtaining a catalyst.
The gas containing harmful nitrogen oxides is mixed with
ammonia, and the
mixed gas is contacted with the catalyst. The catalyst exhibits
excellent
activity and selectivity of long life at low temperature and high
space
velocity.

L54 ANSWER 22 OF 22 WPIX COPYRIGHT 2004 THE THOMSON CORP on STN
ACCESSION NUMBER: 1977-83153Y [47] WPIX
TITLE: Nitric oxide removal from nitrogen containing oxygen
and opt.

nickel, steam - by reduction with ammonia over copper,

DERWENT CLASS: **manganese** oxide catalyst.
PATENT ASSIGNEE(S): E36 J01
COUNTRY COUNT: (FARH) HOECHST AG
PATENT INFORMATION: 1

PATENT NO	KIND	DATE	WEEK	LA	PG
DE 2620378	A	19771117	(197747)*		
DE 2620378	C	19851121	(198548)		

PRIORITY APPLN. INFO: DE 1976-2620378 19760508

AN 1977-83153Y [47] WPIX

AB DE 2620378 A UPAB: 19930901

Selective removal involves reduction of N oxides (I) with excess ammonia (II)

at 180-250 degrees C in the presence of a catalyst (III) consisting of a

homogeneous mixture of oxides of Cu, Ni and Mn, each in a weight ratio between

0.1 and 1, pref. 1:1:1:.. Only a relatively slight (1.1-10, especially 1.1-2.4

fold) stoichiometric excess of (II) is needed.

The gas mixture contains 300-5000 ppm. (I), 0.5-5 volume % O and 0-3 volume

% steam. (III) can be used alone as pellets or as mixture of 2-40 weight %

(III) on an inert support. E.g. the NO content of a gas mixture was reduced

from 1000 to under 10 ppm. by reduction with (II) over (III) on alpha-alumina.

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